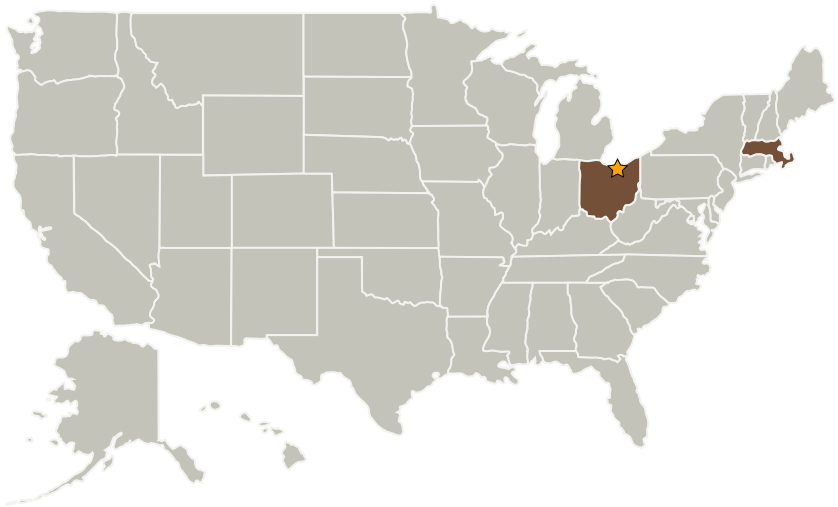
Shared Magnetics Hall Thruster, Phase II

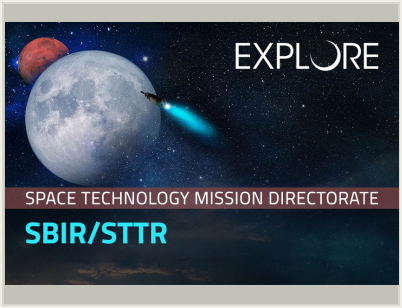
Completed Technology Project (2005 - 2007)

Project Introduction

In the proposed Phase II program, Busek Co. will demonstrate an innovative methodology for clustering Hall thrusters into a high performance, very high power propulsion system. To fulfill the full range of Hall thruster power requirements (100 kW ? 1 MW) envisioned by NASA for orbit insertion, planetary transfers and manned exploration, rather than developing a >500kW system with one or two large thrusters there are clear advantages to reach the very high power by clustering multiple thrusters of lower power. In the Phase I program, Busek demonstrated a shared magnetics clustering concept that combined the benefits of simple clustering with additional advantages such as the mass savings and power loss reduction of a shared magnetic structure. In Phase II, Busek will demonstrate an alternative shared magnetics concept of clustering and design, fabricate and test a sub-scale nested thruster. The nested thruster consists of two concentric discharge cavities that share a portion of the magnetic structure. Busek will also continue to investigate the shared magnetics concept of the Phase I program and merge the nested concept into the shared magnetics cluster architecture. Busek is uniquely positioned to implement the proposed program having expertise in both the clustering of Hall thrusters and shared magnetics thruster development.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Busek Company, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Natick, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

December 2005: Project Start

December 2007: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.2 Electrostatic